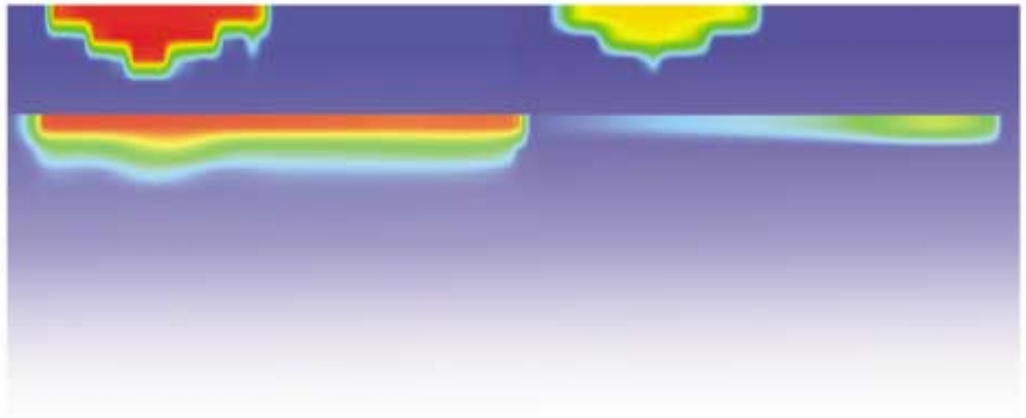

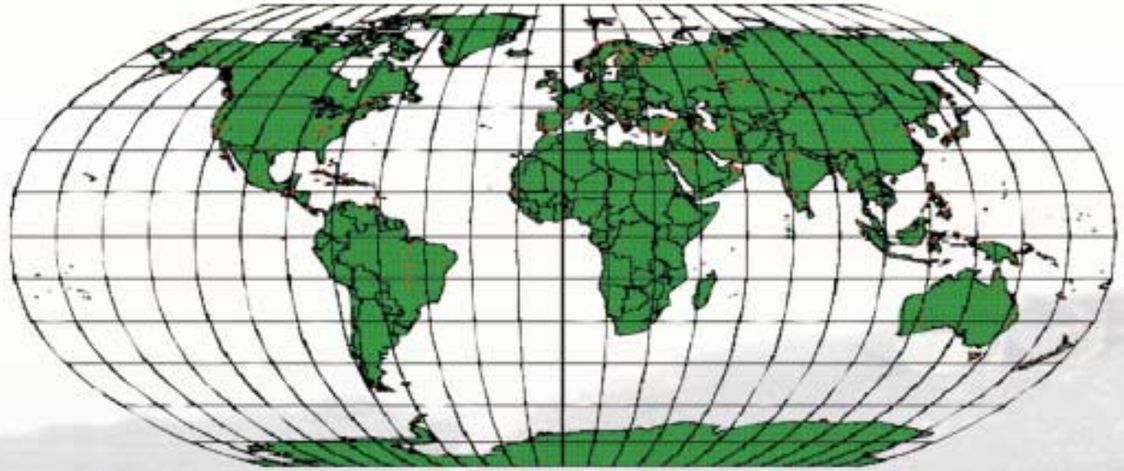

Carbon Management

Steady increases in world CO_2 emissions have raised legitimate concerns about future global warming, which is likely to result as CO_2 in the atmosphere increases. EES Division is using its understanding of earth systems and earth materials to explore several avenues for the capture and storage of CO_2, and we believe these avenues have promise for the future. In collaboration with T Division, we are developing a concept for the production of hydrogen from coal, with the simultaneous capture of a pure stream of CO_2 for storage. Working with an industry consortium, we hope to implement this concept, known as Zero-Emission Coal, as a pilot facility within the next 5-7 years. We are also investigating storing the captured CO_2 in natural carbon reservoirs. In this mineral-carbonation effort, we hope to mimic a natural carbon cycle industrially by converting the CO_2 into magnesium carbonate. In our terrestrial sequestration effort, we are developing a fundamental understanding of the carbon cycle in semiarid regions to evaluate its potential as a storage reservoir for carbon removed from the atmosphere. In a combined field and numerical modeling effort, we are using our understanding of flow and transport to investigate storing CO_2 in depleted oil and gas reservoirs.